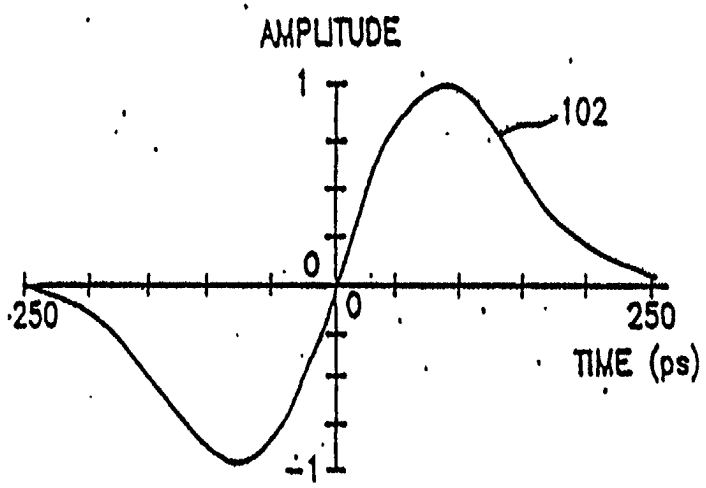

AMPLITUDE
1
0
-1
250
0
250
TIME (ps)
102

FIG. 1A

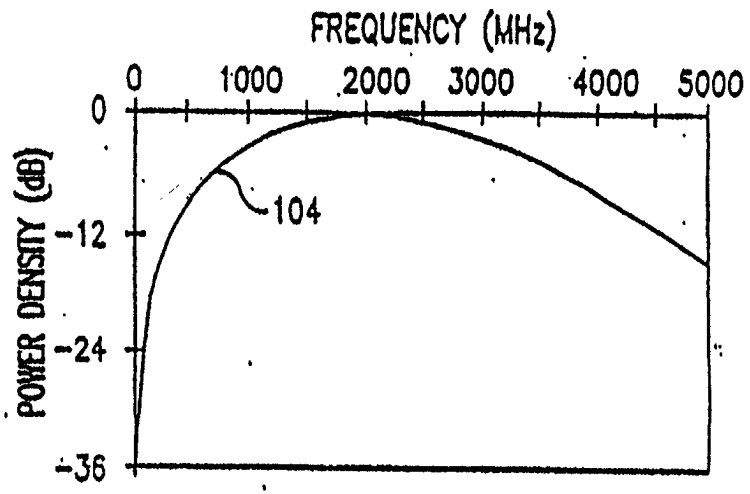

FREQUENCY (MHz)
0
1000
2000
3000
4000
5000
0
-12
-24
-36
POWER DENSITY (dB)
104

FIG. 1B

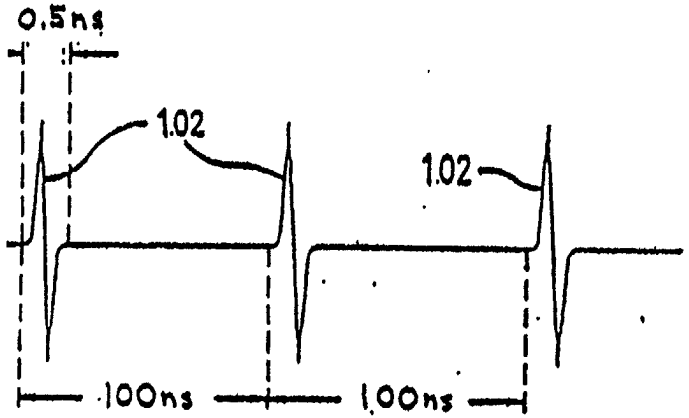


FIG.2A

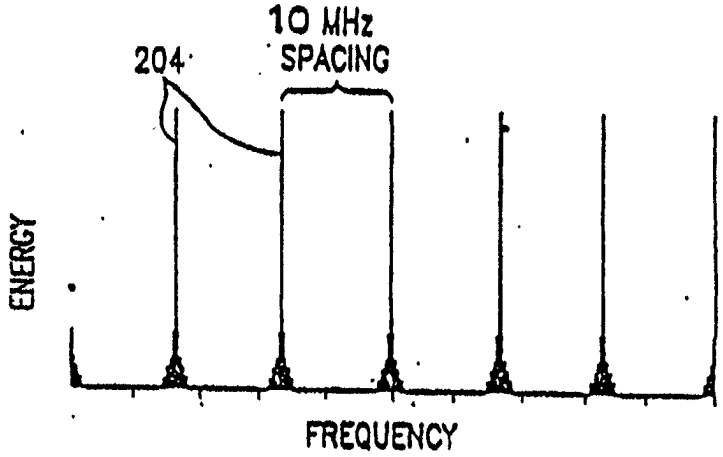


FIG.2B

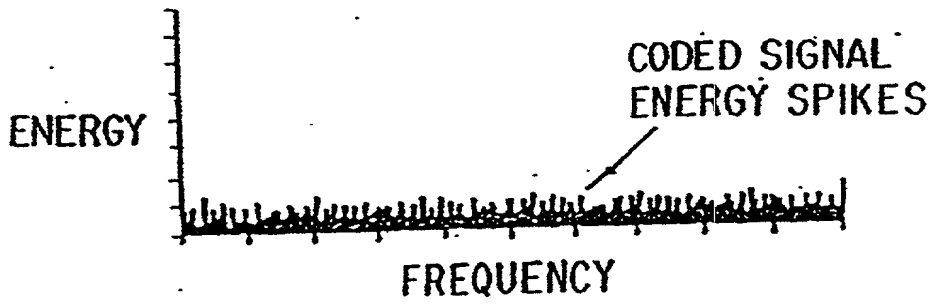


FIG. 3

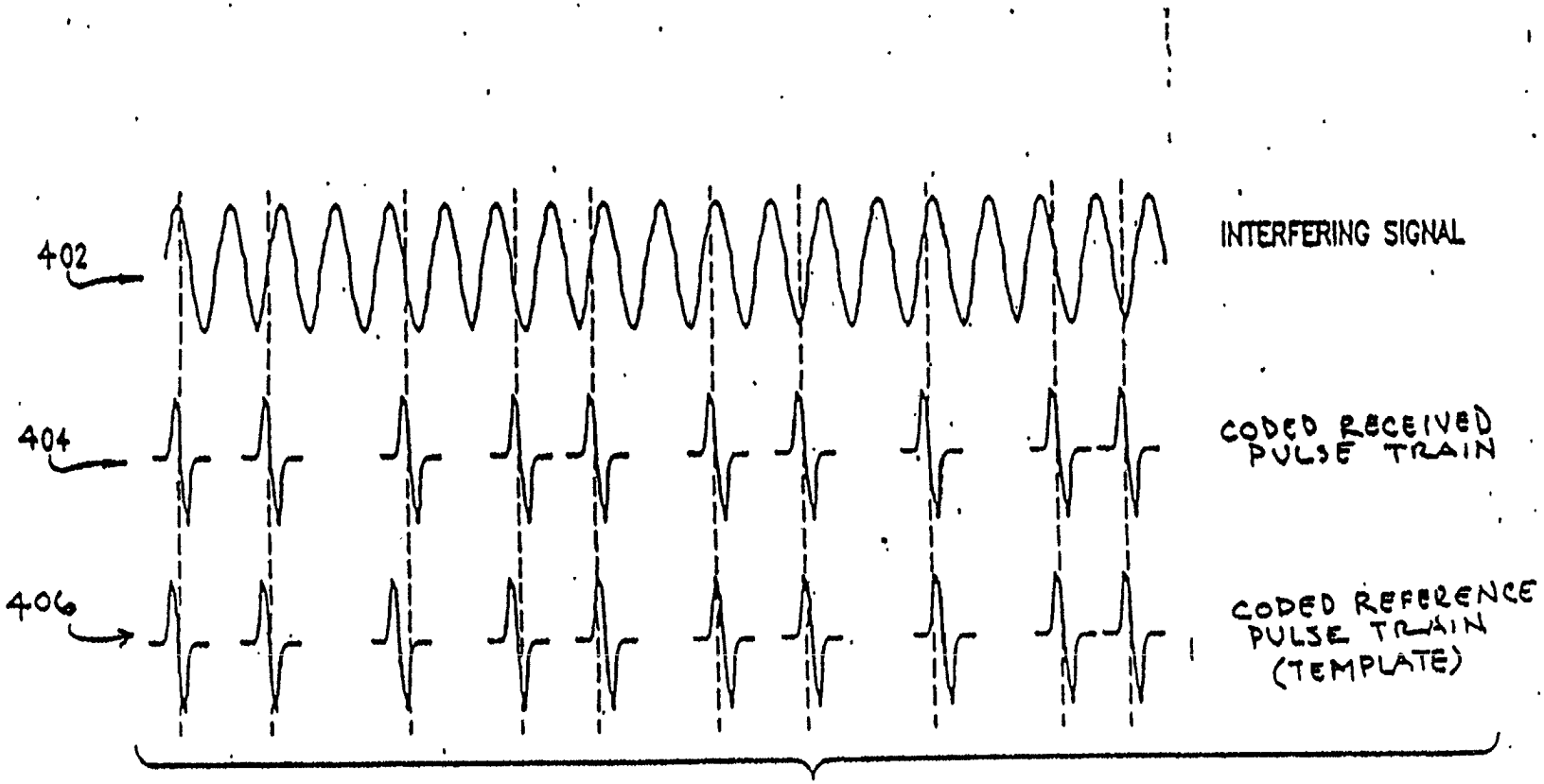


FIG. 4

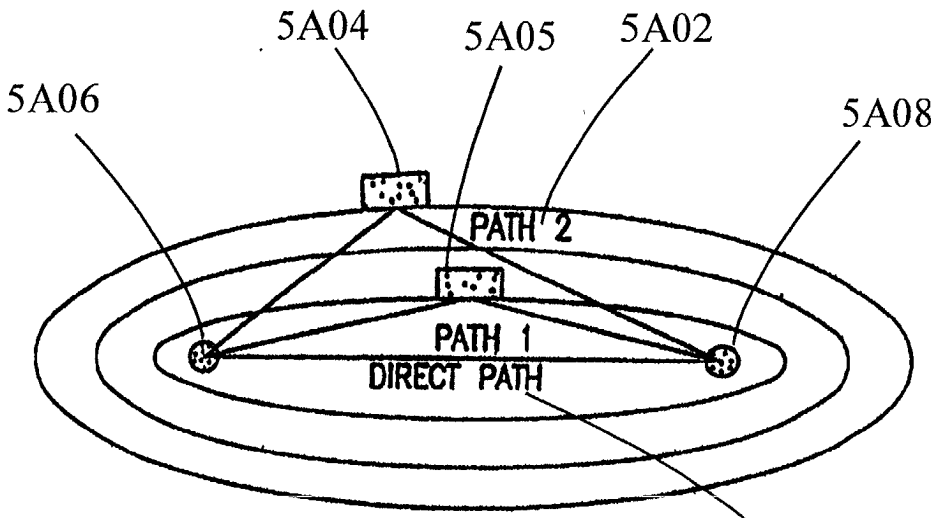

5A04
5A05
5A02
5A06
5A08
PATH 2
PATH 1
DIRECT PATH
5A01

FIG.5A

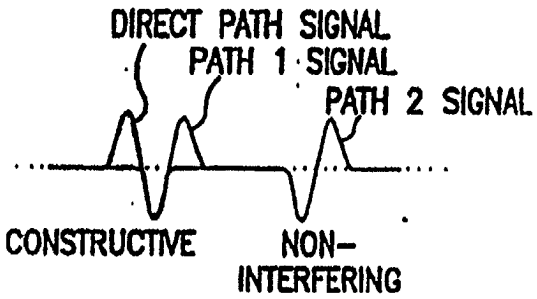

DIRECT PATH SIGNAL
PATH 1 SIGNAL
PATH 2 SIGNAL
CONSTRUCTIVE
NON-
INTERFERING

FIG.5B

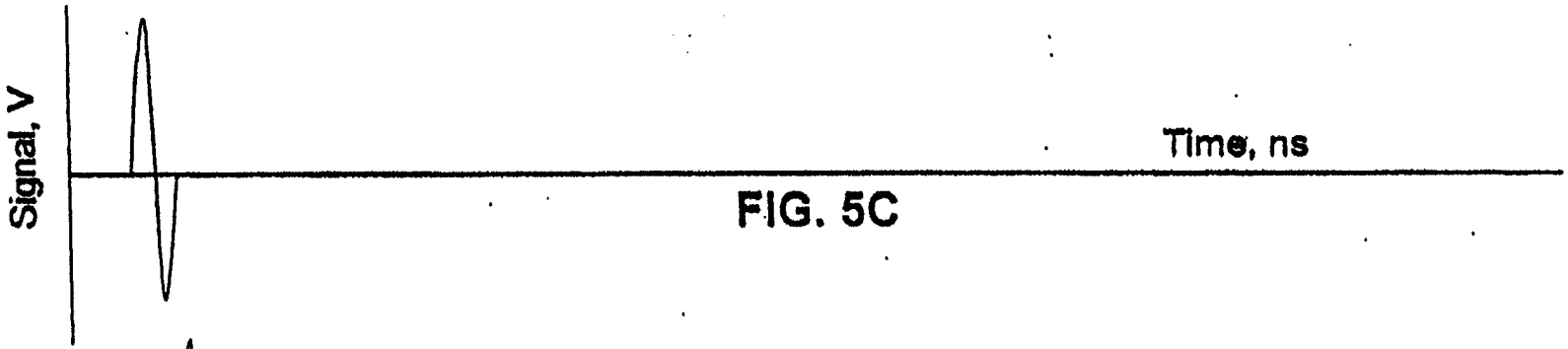


FIG. 5C

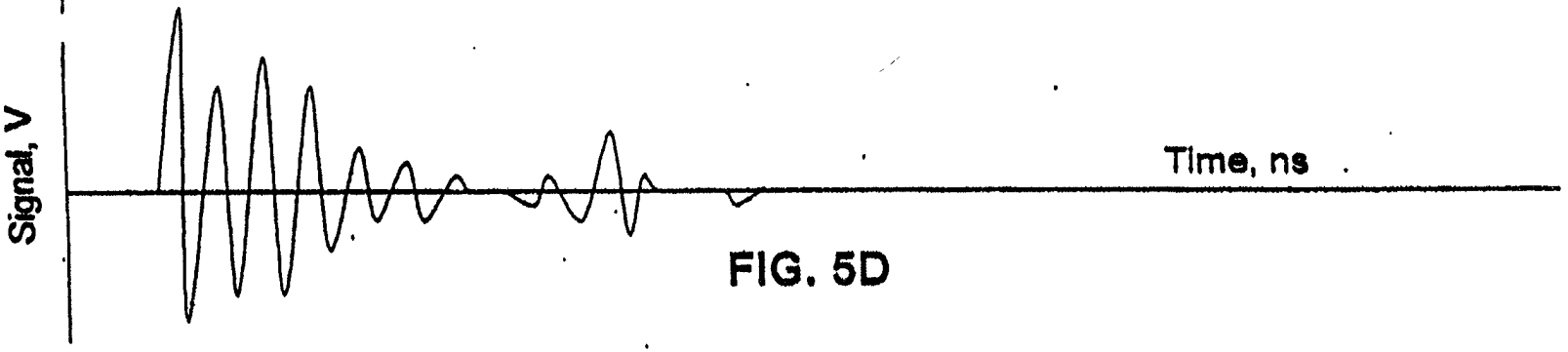


FIG. 5D

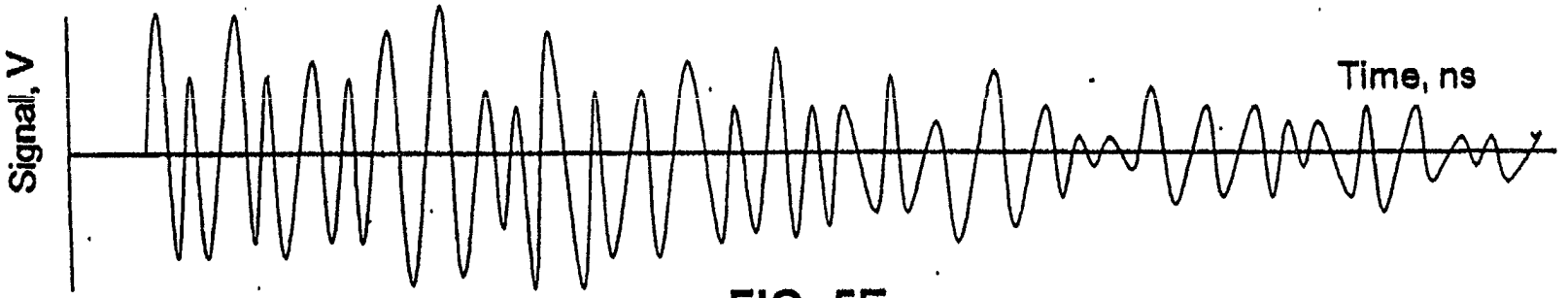


FIG. 5E

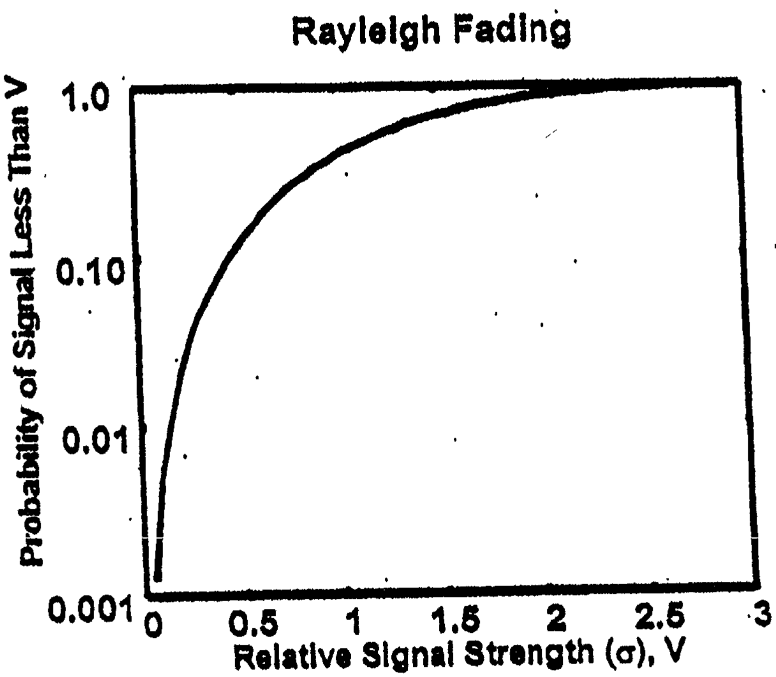

Rayleigh Fading
Probability of Signal Less Than V
1.0
0.10
0.01
0.001
0
0.5
1
1.5
2
2.5
3
Relative Signal Strength (σ), V

Fig. 5F

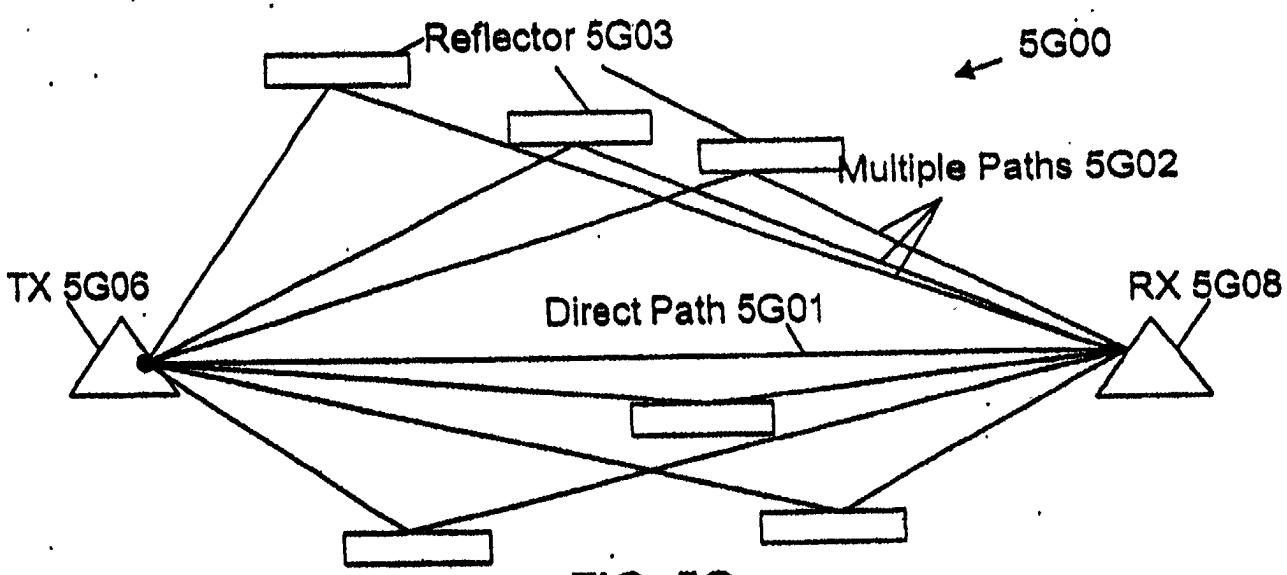


FIG. 5G

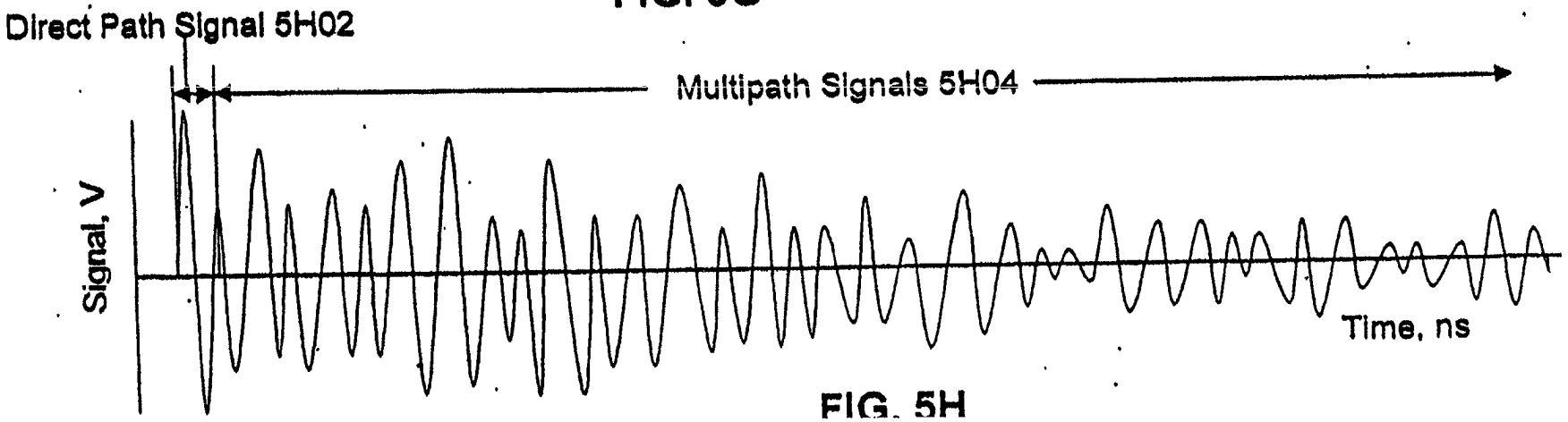


FIG. 5H

FIG. 7

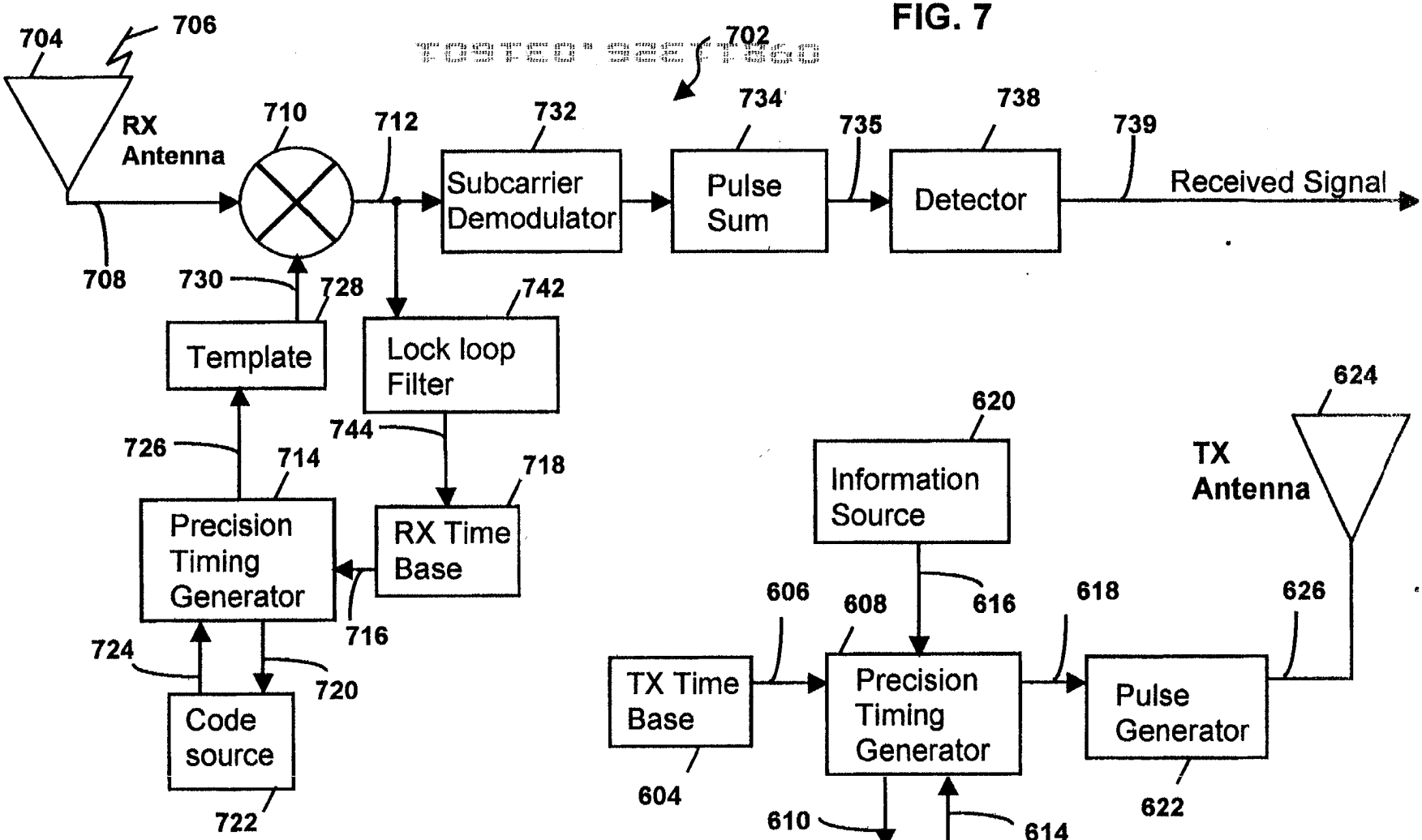

704
706
RX Antenna
710
712
732
734
735
738
739
Subcarrier Demodulator
Pulse Sum
Detector
Received Signal
708
730
728
742
Template
Lock loop Filter
744
726
714
718
Precision Timing Generator
RX Time Base
716
724
720
Code source
722
624
620
TX Antenna
Information Source
606
608
616
618
626
TX Time Base
Precision Timing Generator
Pulse Generator
604
610
614
622
Code source
612
602

FIG. 6

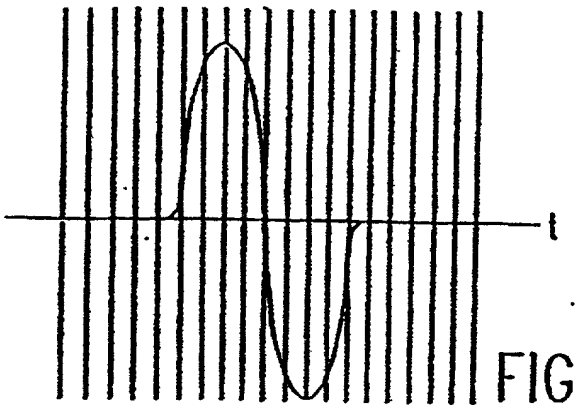


FIG. 8A

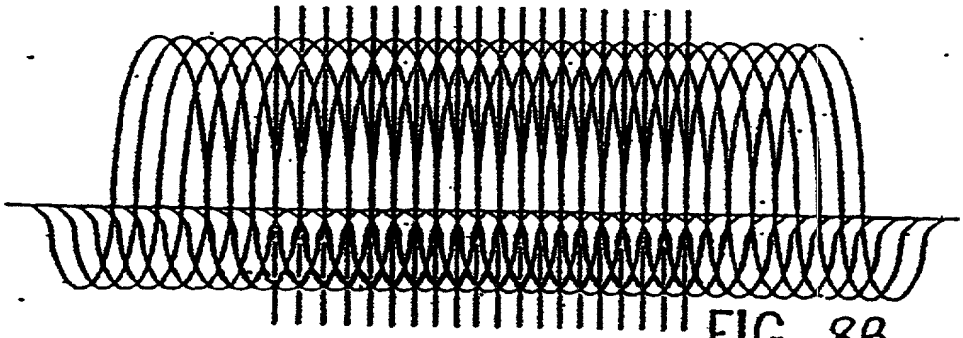


FIG. 8B

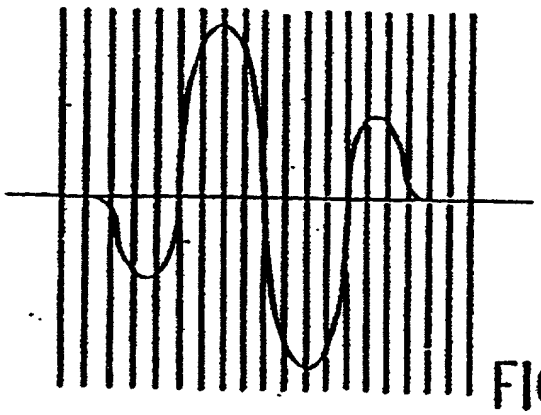


FIG. 8C

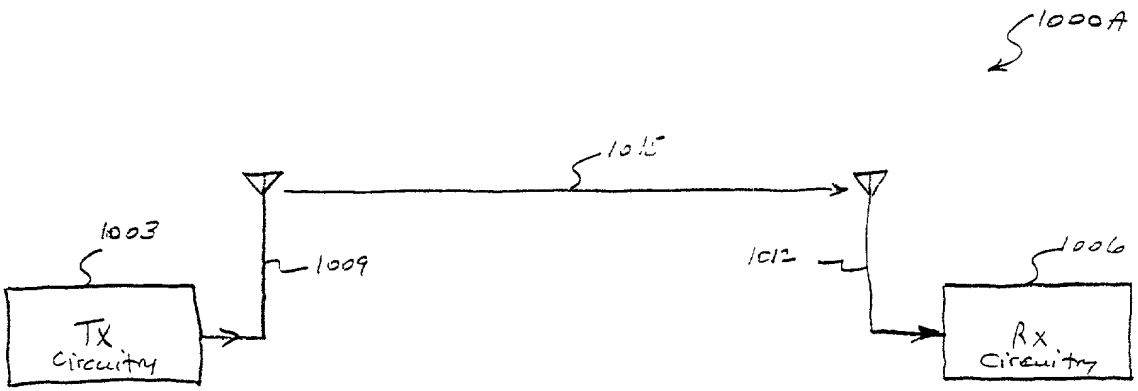


FIG. 9

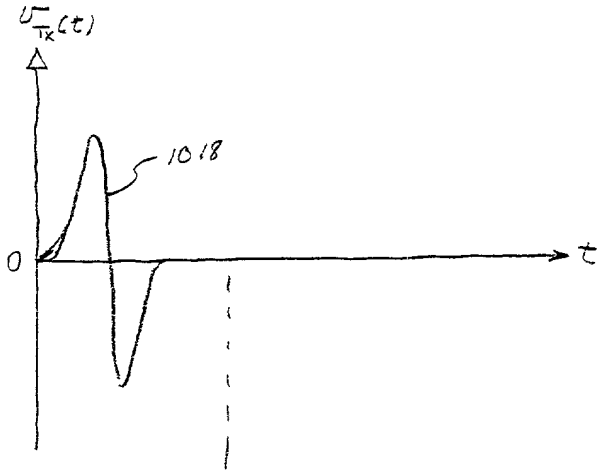


FIG. 10A

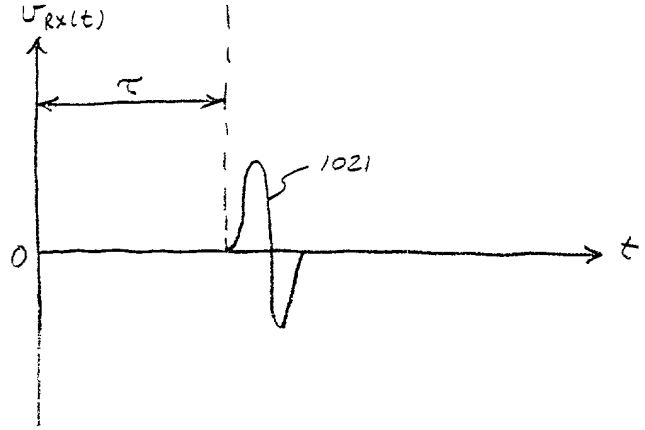


FIG. 10B

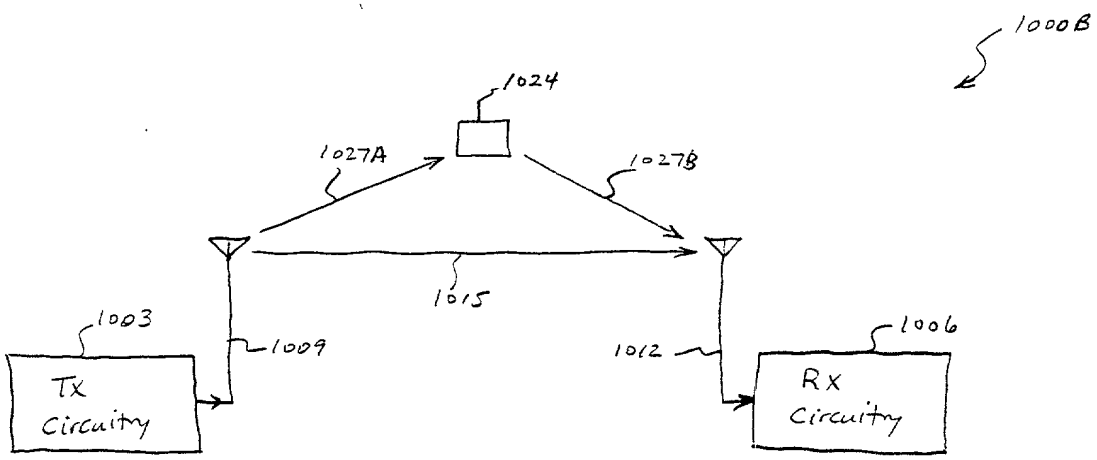


FIG. 11

FIG. 12A

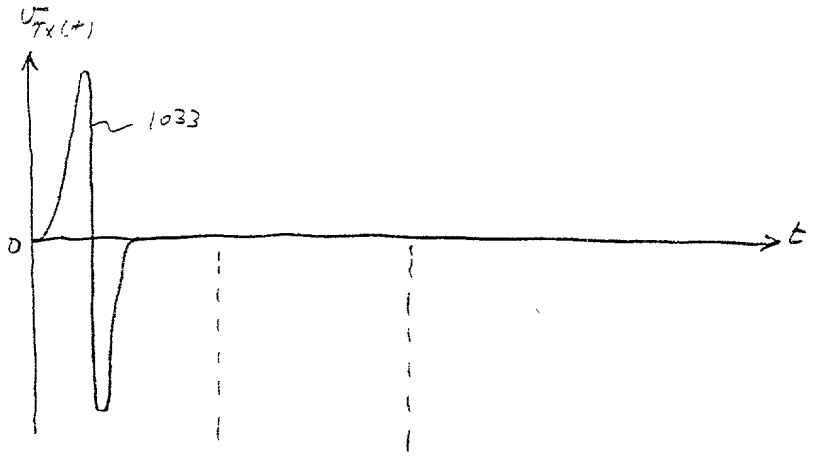
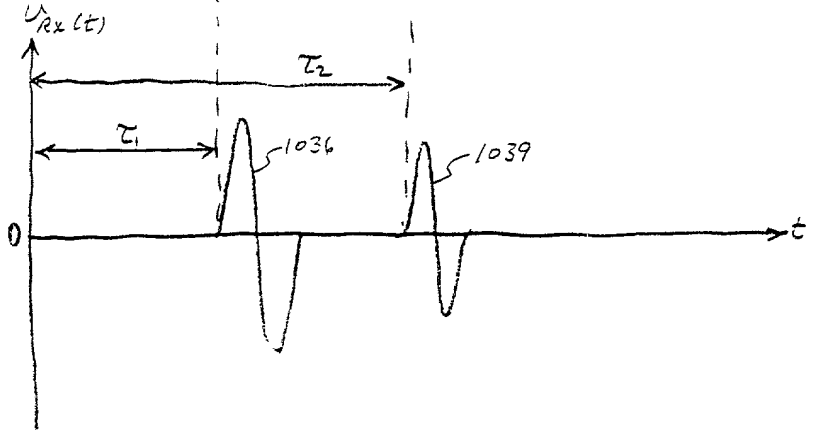


FIG. 12B



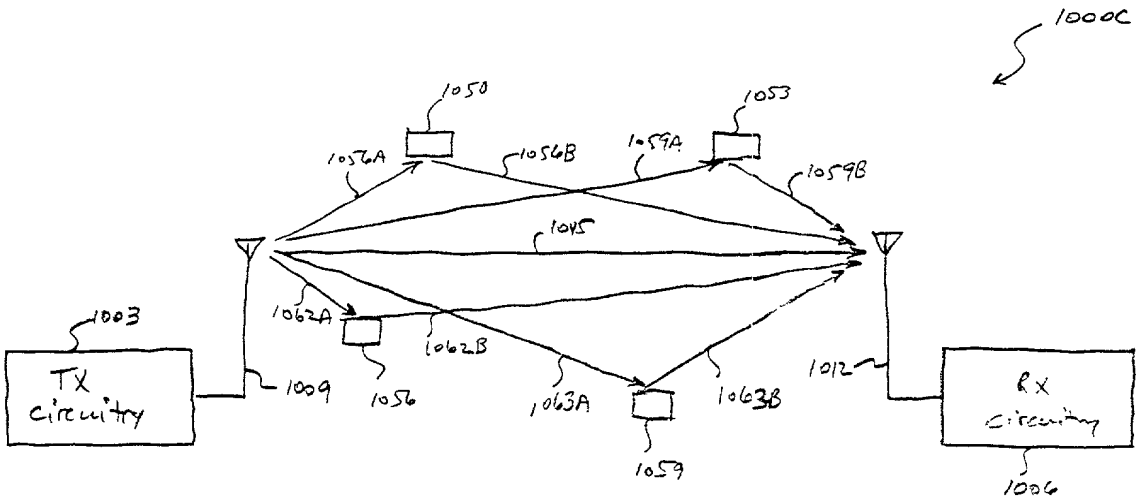


FIG. 13

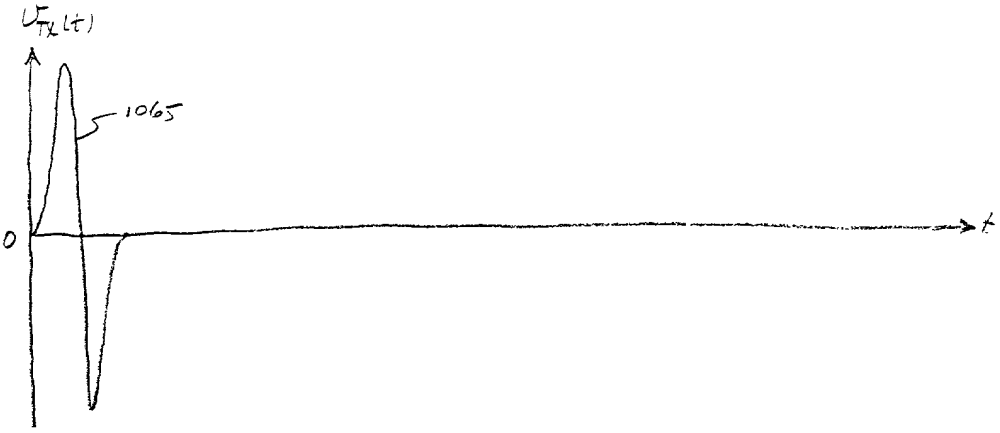


FIG. 14A

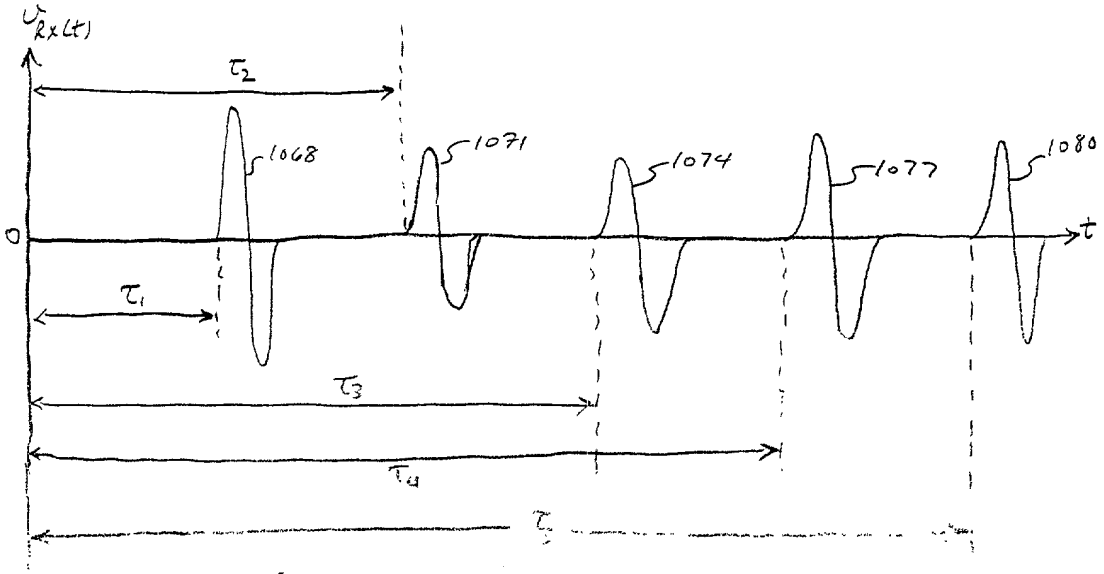


FIG. 14B

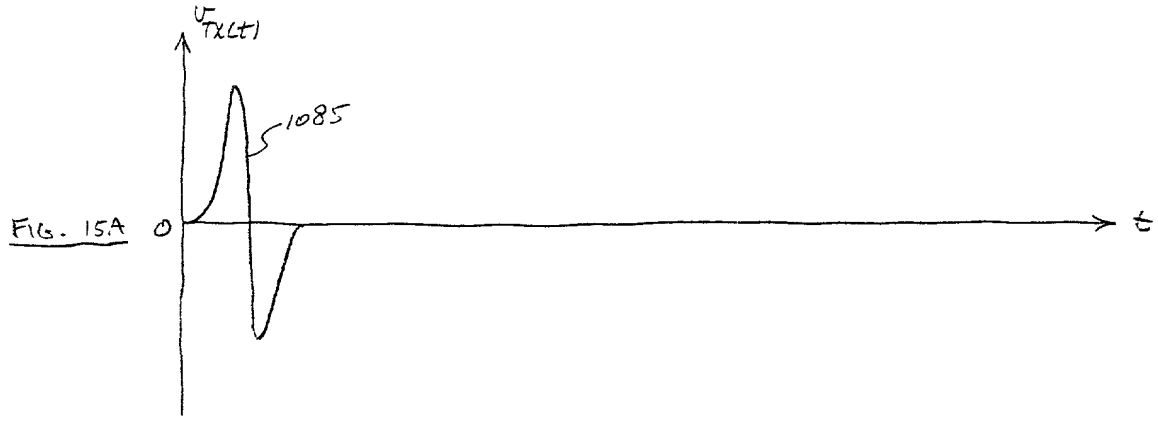


FIG. 15A

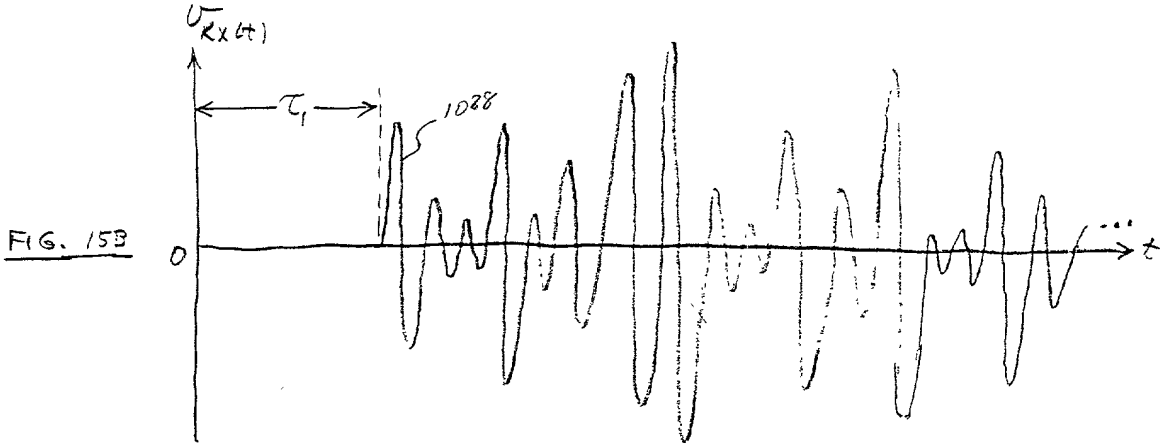


FIG. 15B

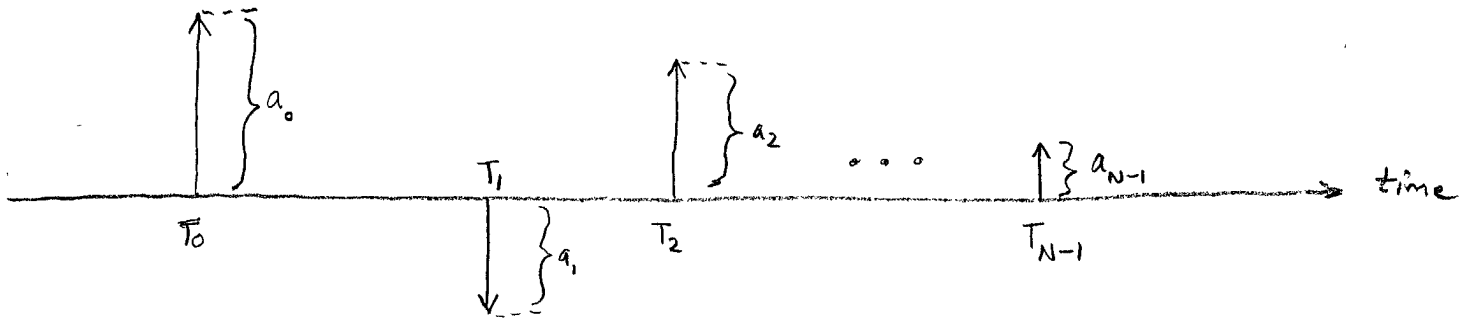


FIG. 16

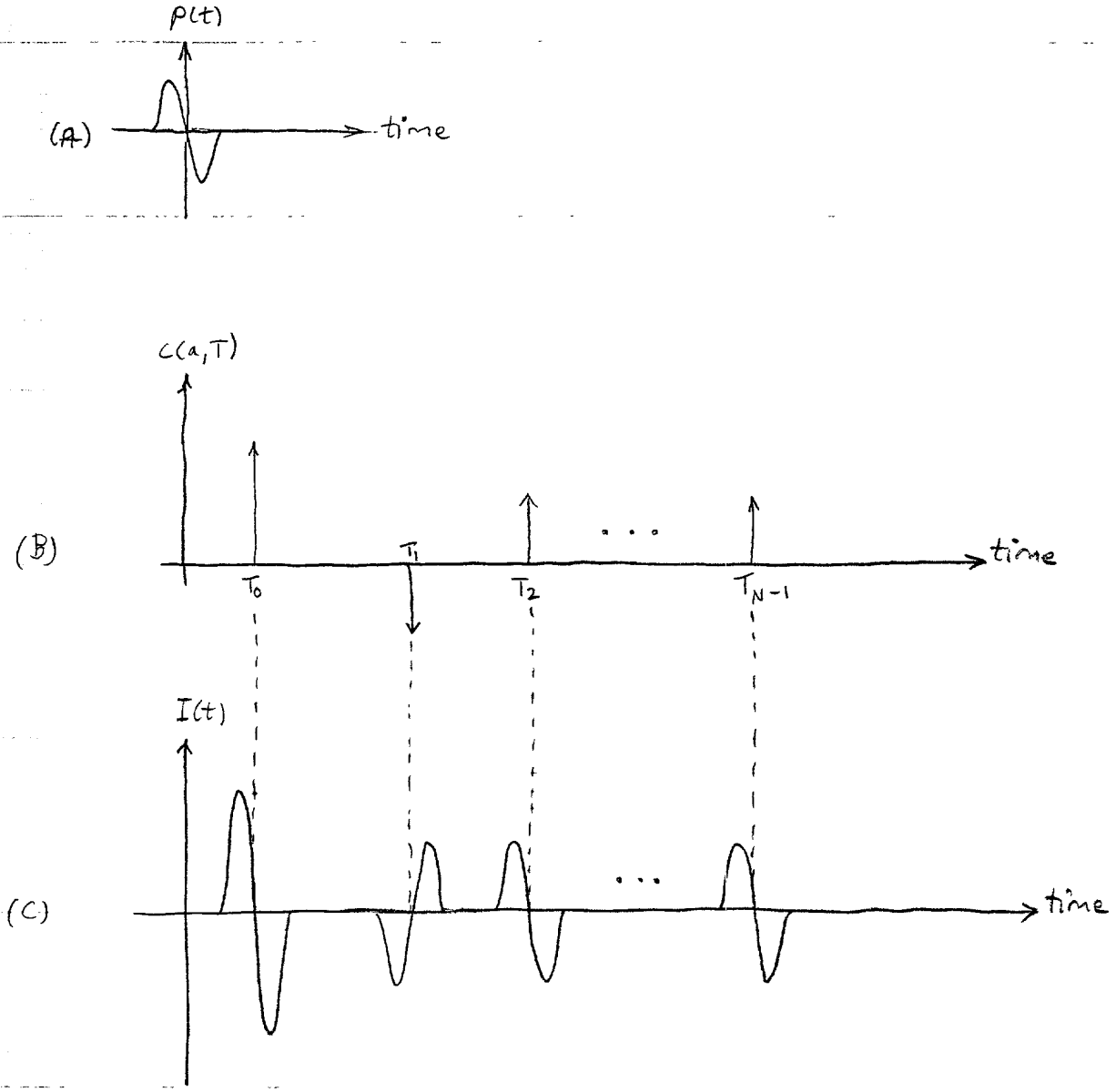


FIG. 17

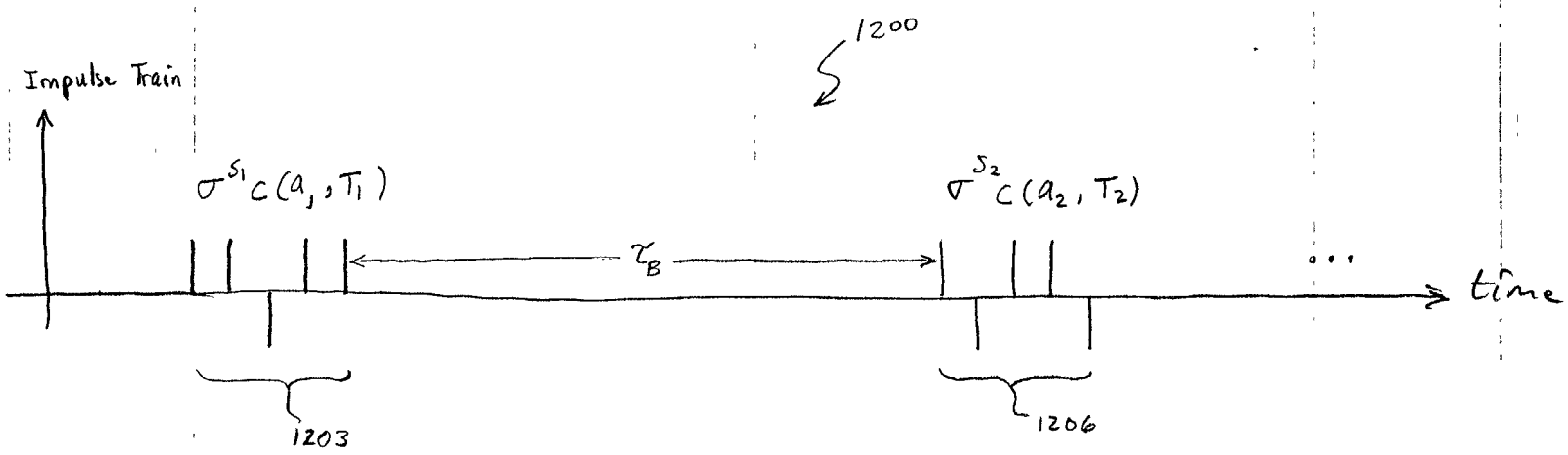

1200
Impulse Train
$\sigma^{S_1} C(a_1, T_1)$
$\sigma^{S_2} C(a_2, T_2)$
τ_B
...
time
1203
1206

FIG. 18

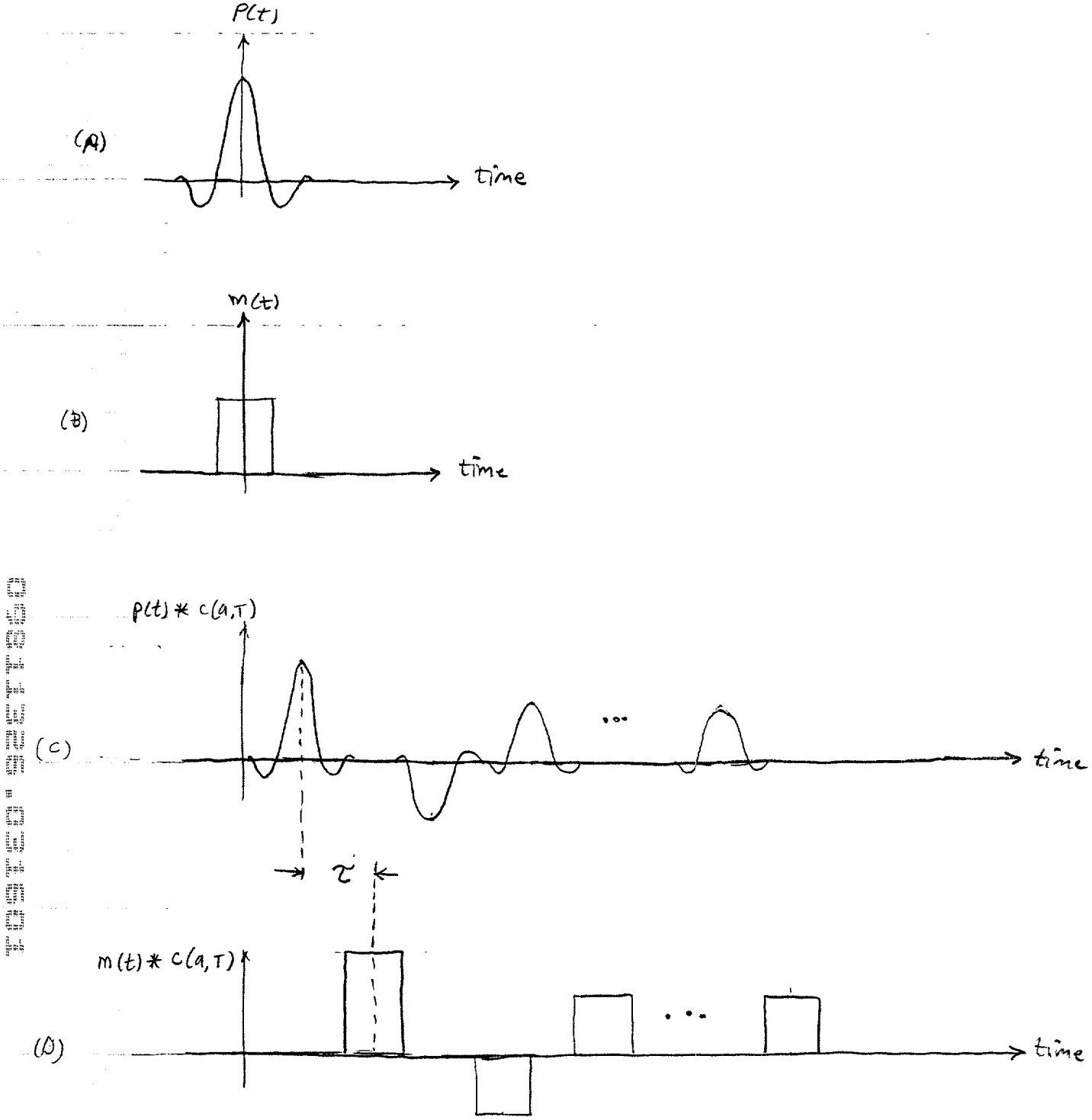


FIG. 19

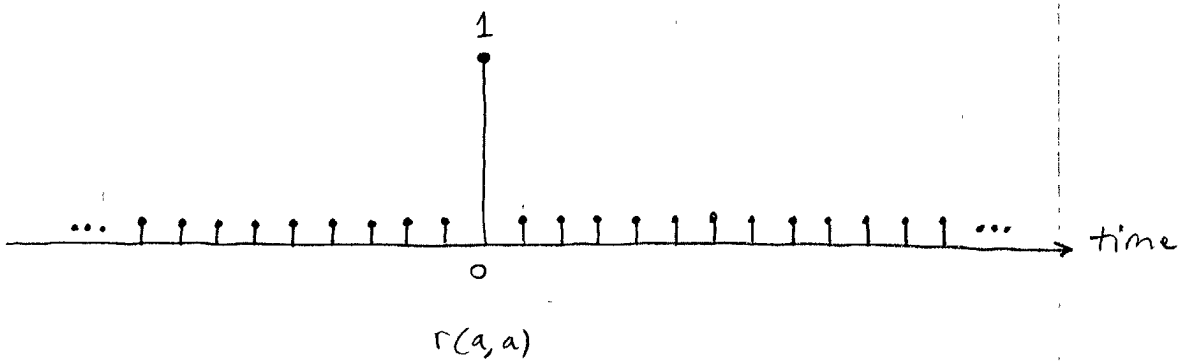


FIG. 20

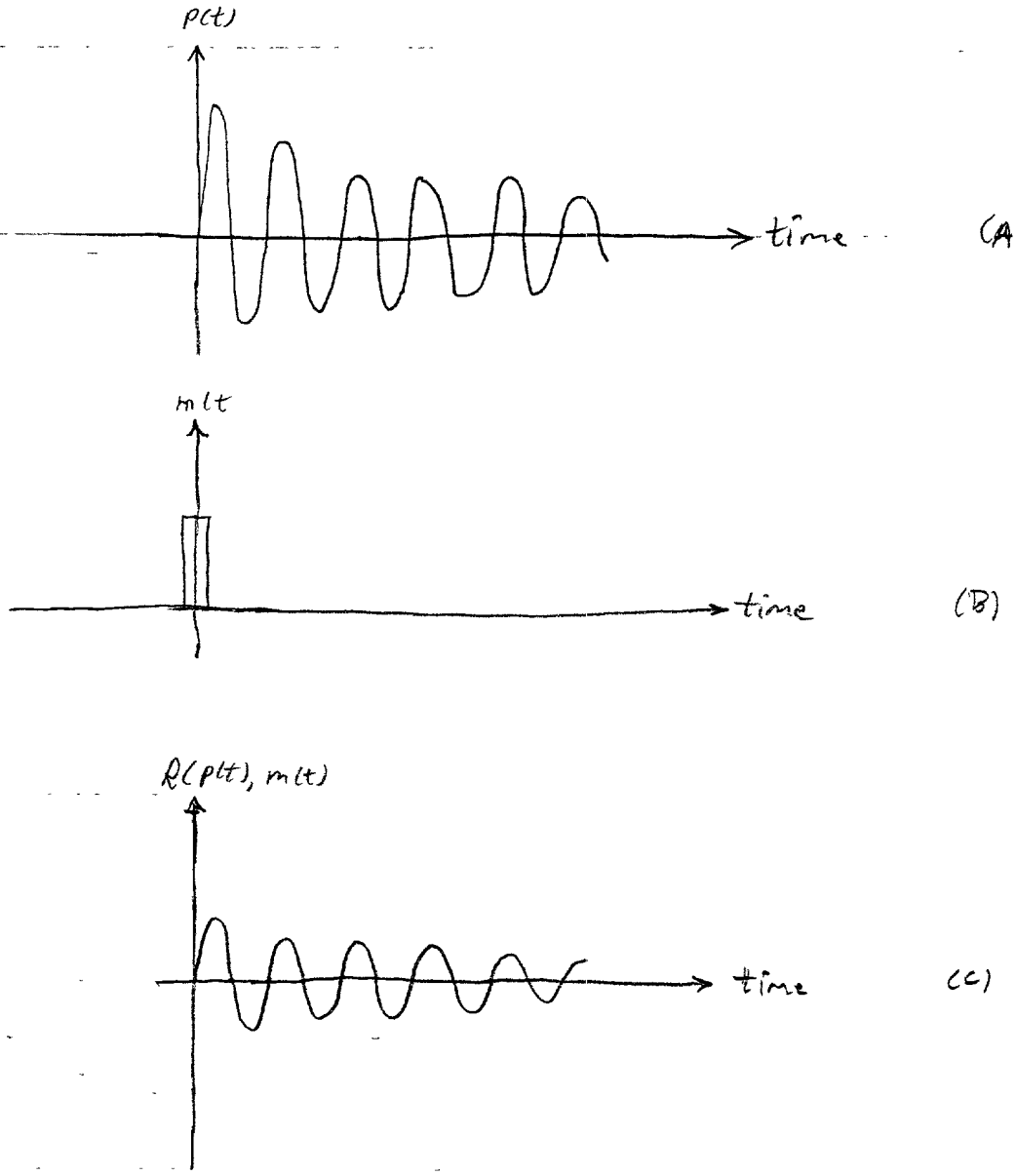


FIG. 21

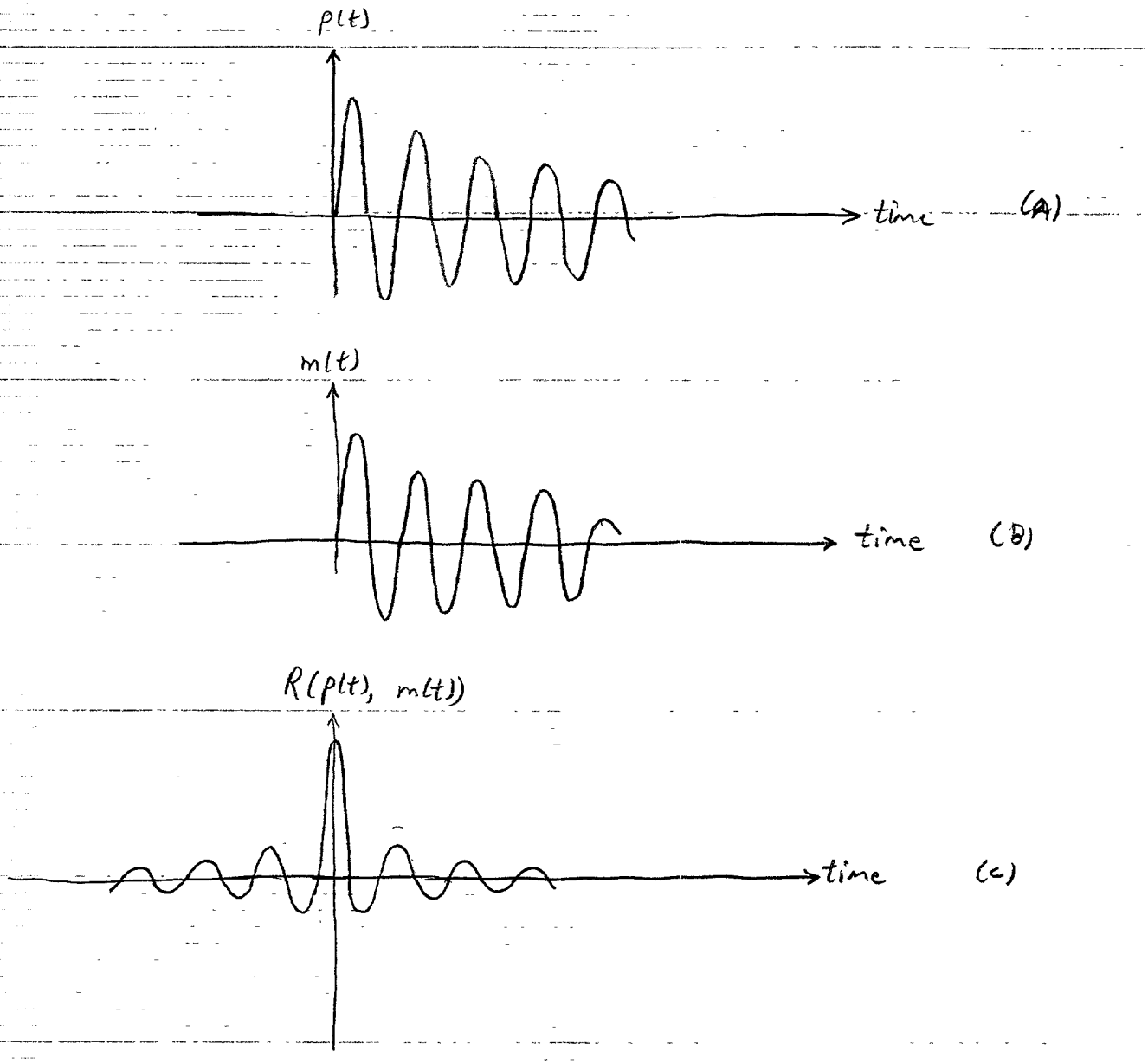


FIG. 22

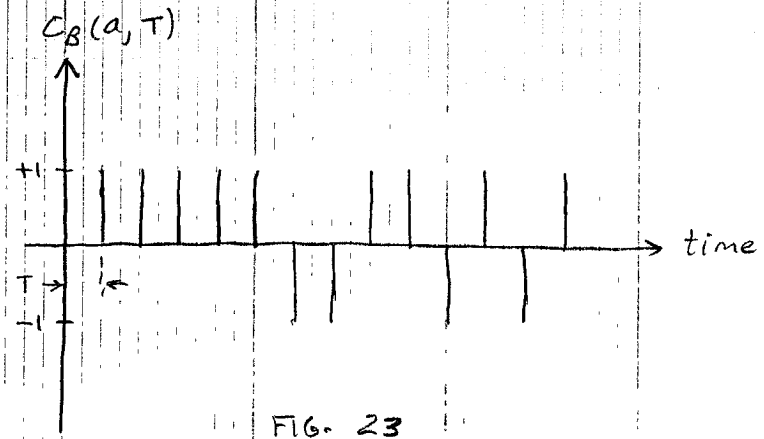


FIG. 23

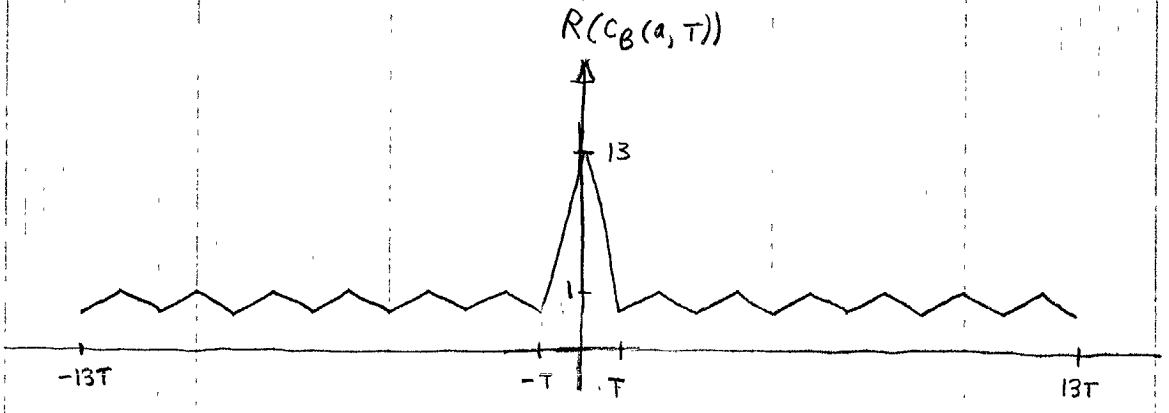


FIG. 24

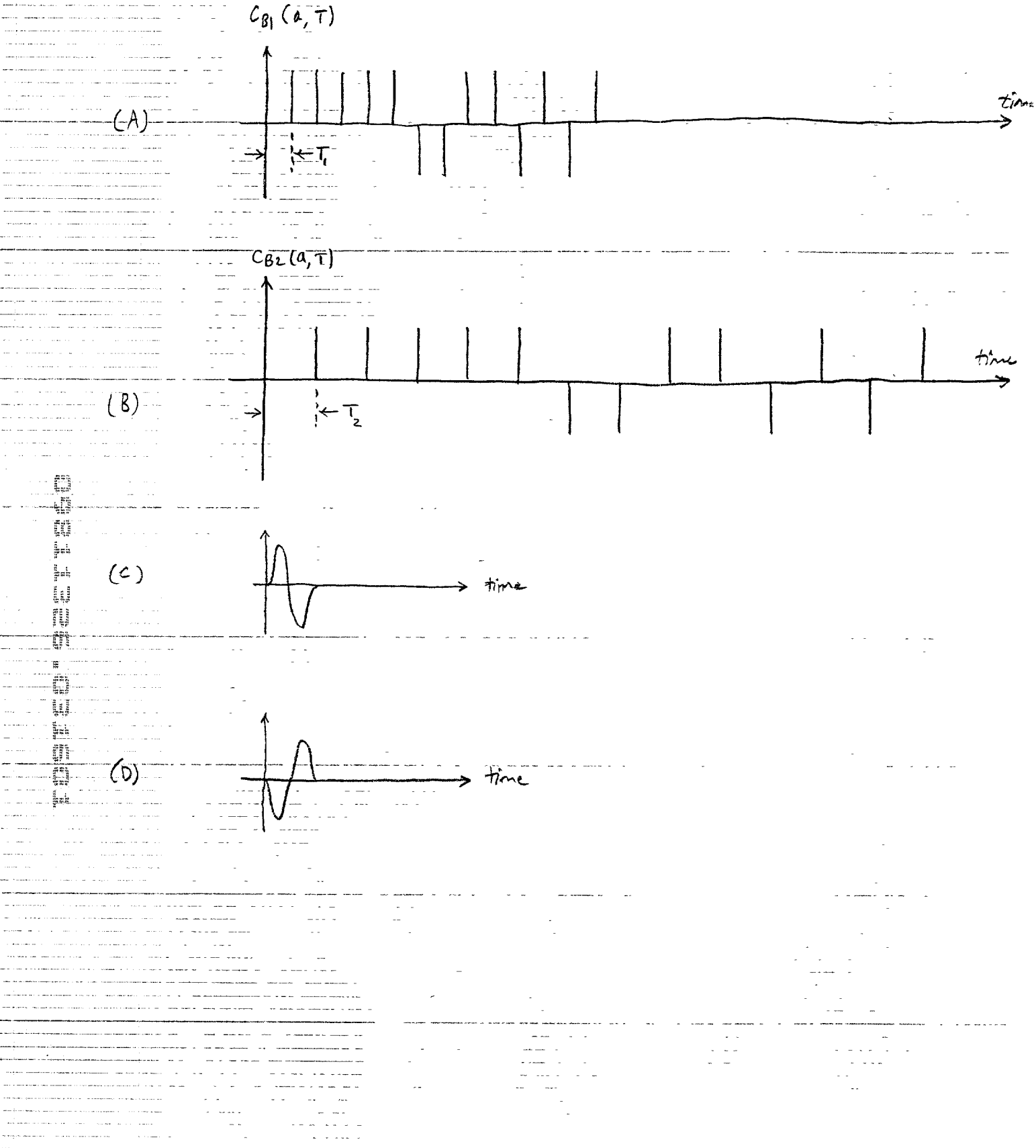


FIG. 25

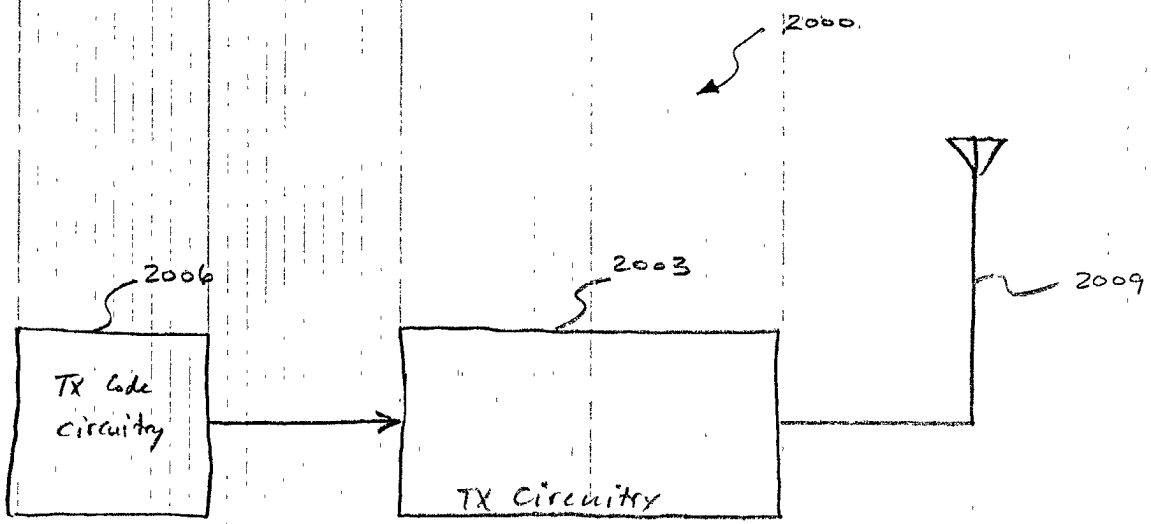


FIG. 26

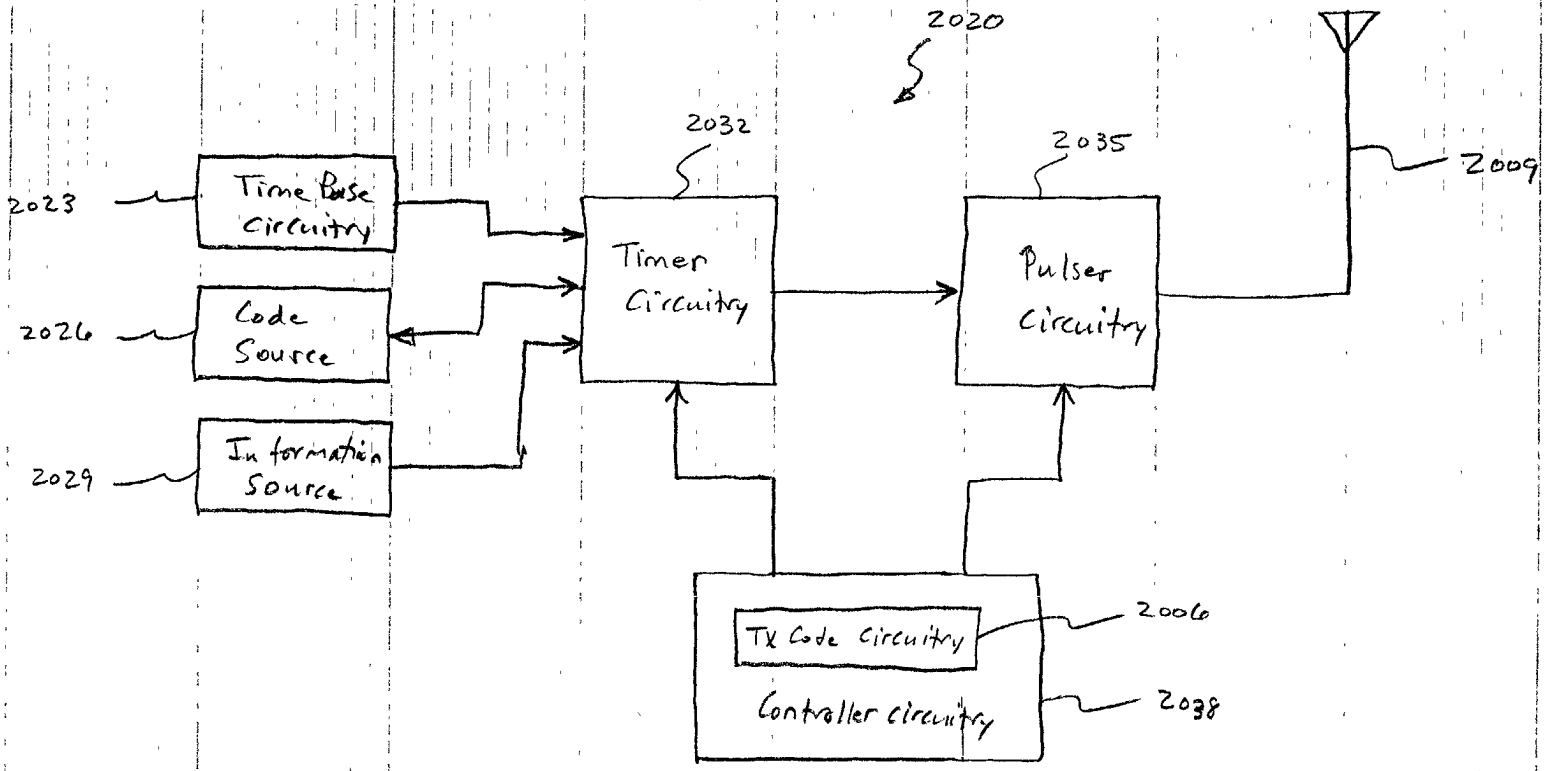


FIG. 27A

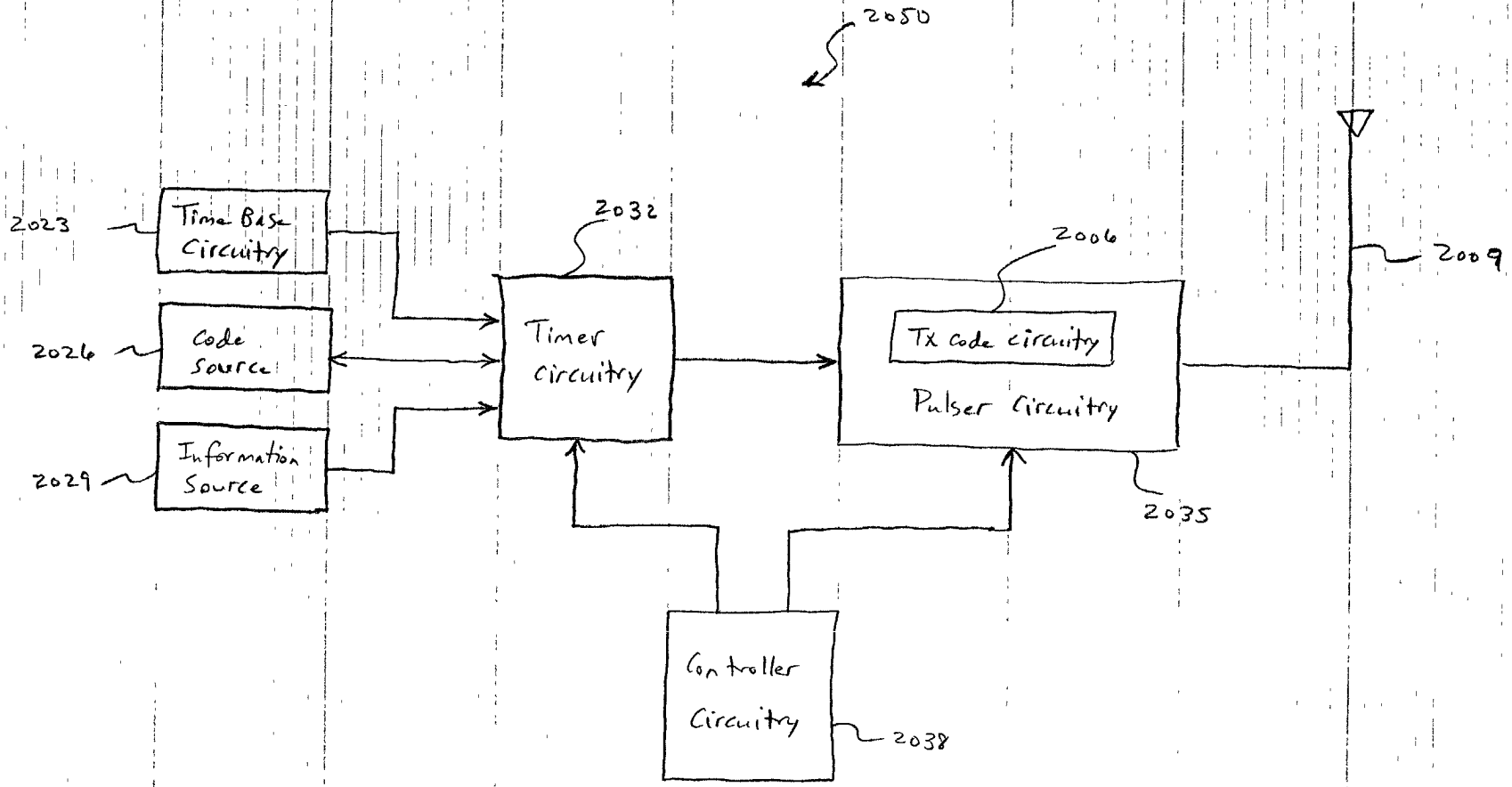

2050
2023
Time Base Circuitry
2032
2006
2009
2026
Code Source
Timer circuitry
Tx code circuitry
Pulser Circuitry
2029
Information Source
2035
Controller Circuitry
2038

FIG. 27B

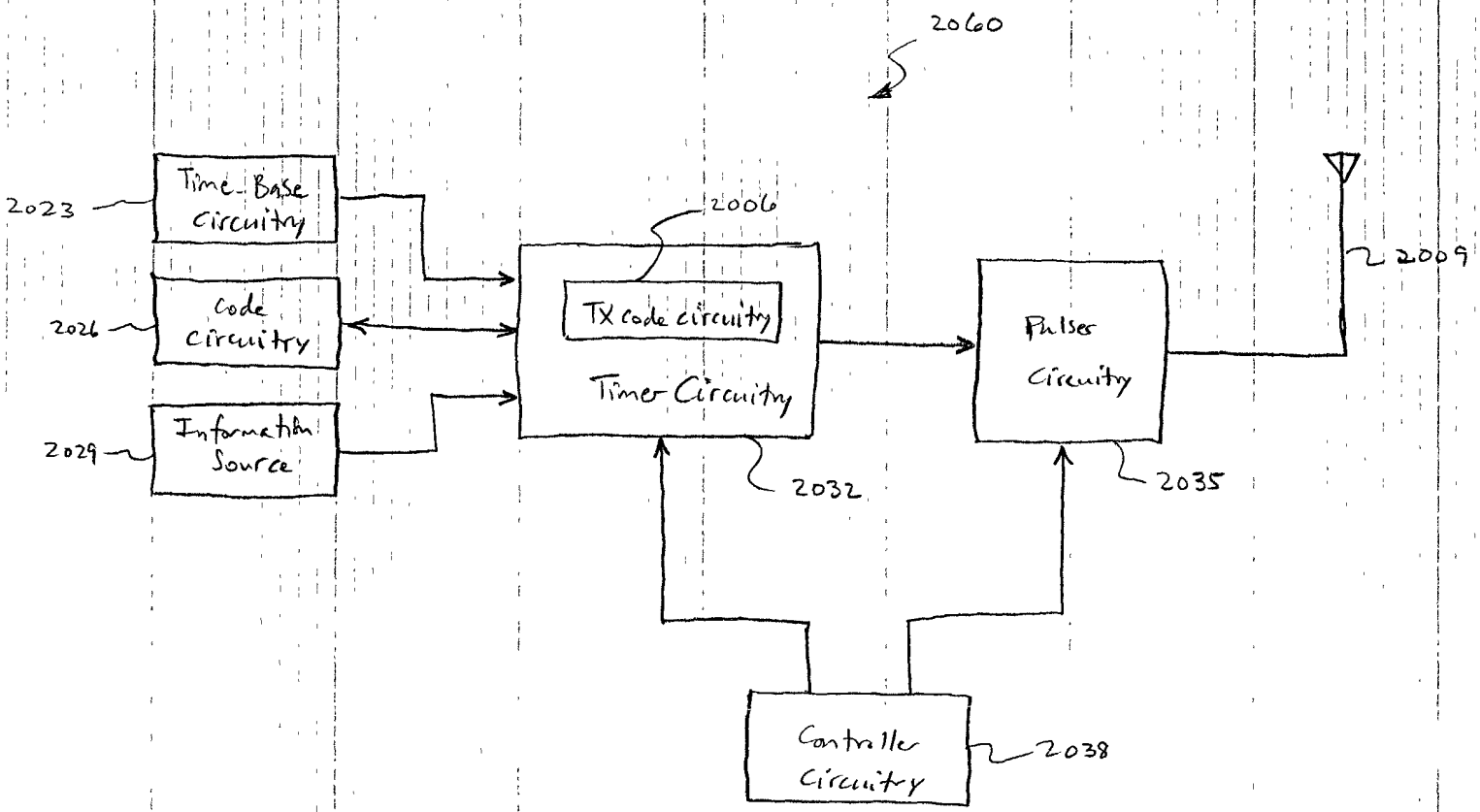

2060
2023
Time Base Circuitry
2026
Code Circuitry
2029
Information Source
2006
TX code circuitry
Timer Circuitry
2032
Pulser Circuitry
2035
2009
Controller Circuitry
2038

FIG. 27C

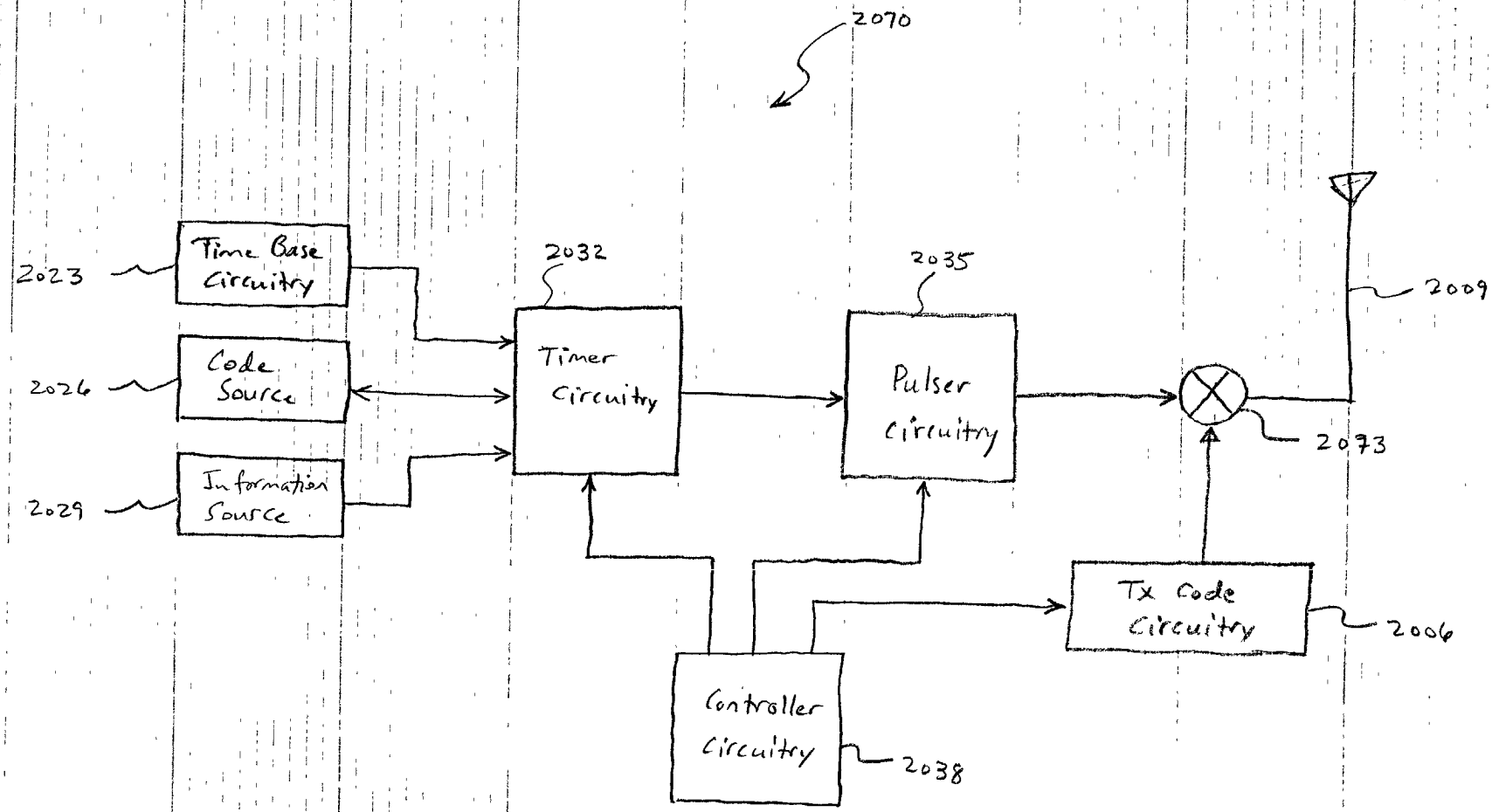

2070
Time Base Circuitry
2023
Code Source
2026
Information Source
2029
2032
Timer Circuitry
2035
Pulser Circuitry
2009
2073
Tx Code Circuitry
2006
Controller Circuitry
2038

FIG. 27D

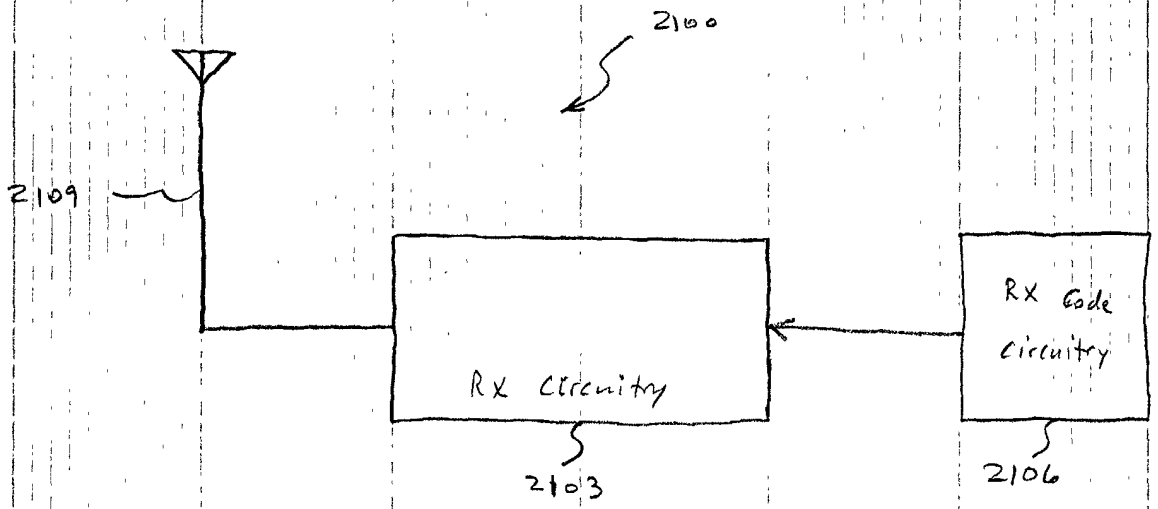


FIG. 28A

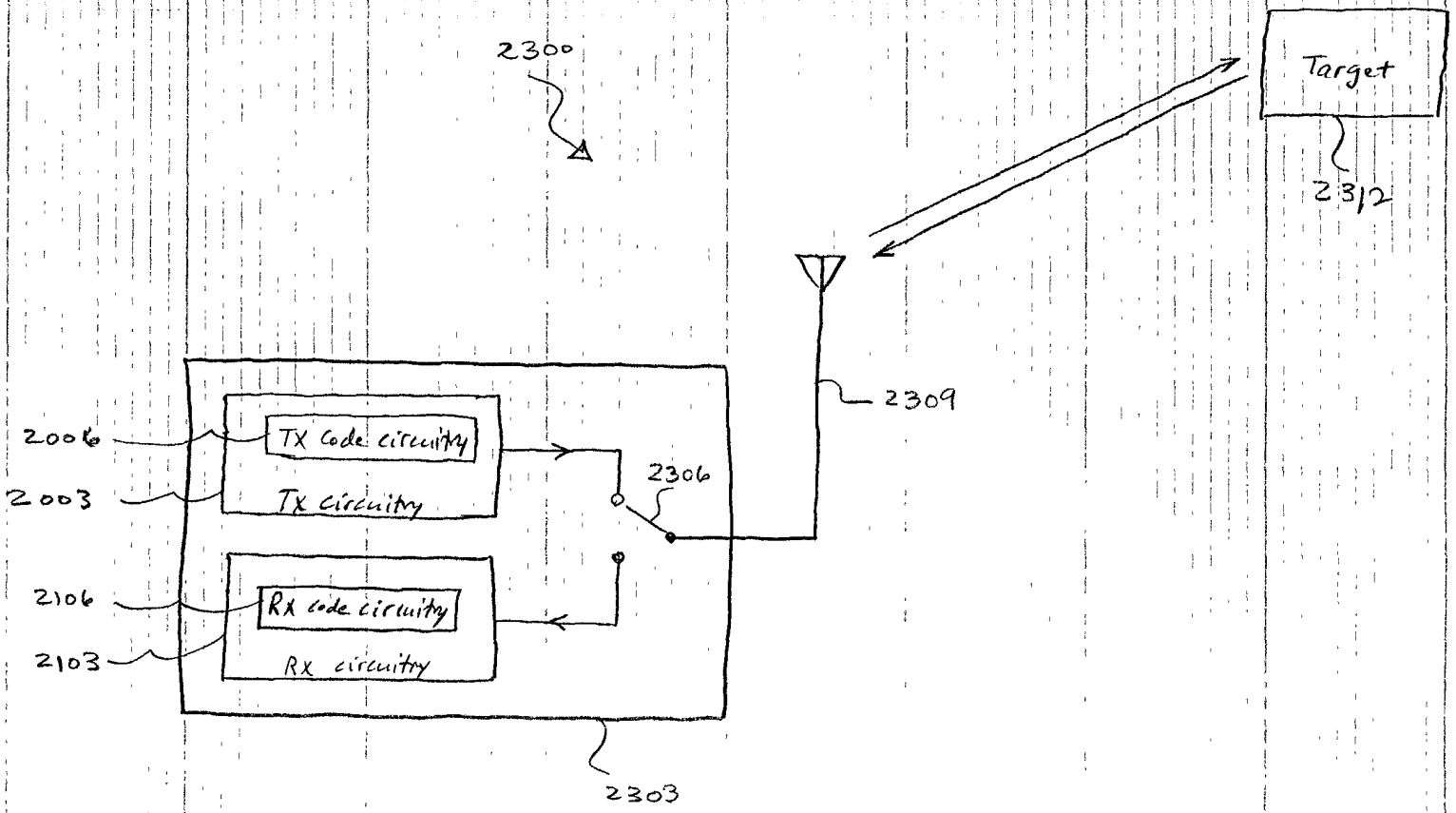

2300
Target
2312
2309
2306
2006
TX code circuitry
2003
TX circuitry
2106
RX code circuitry
2103
RX circuitry
2303

FIG. 29A

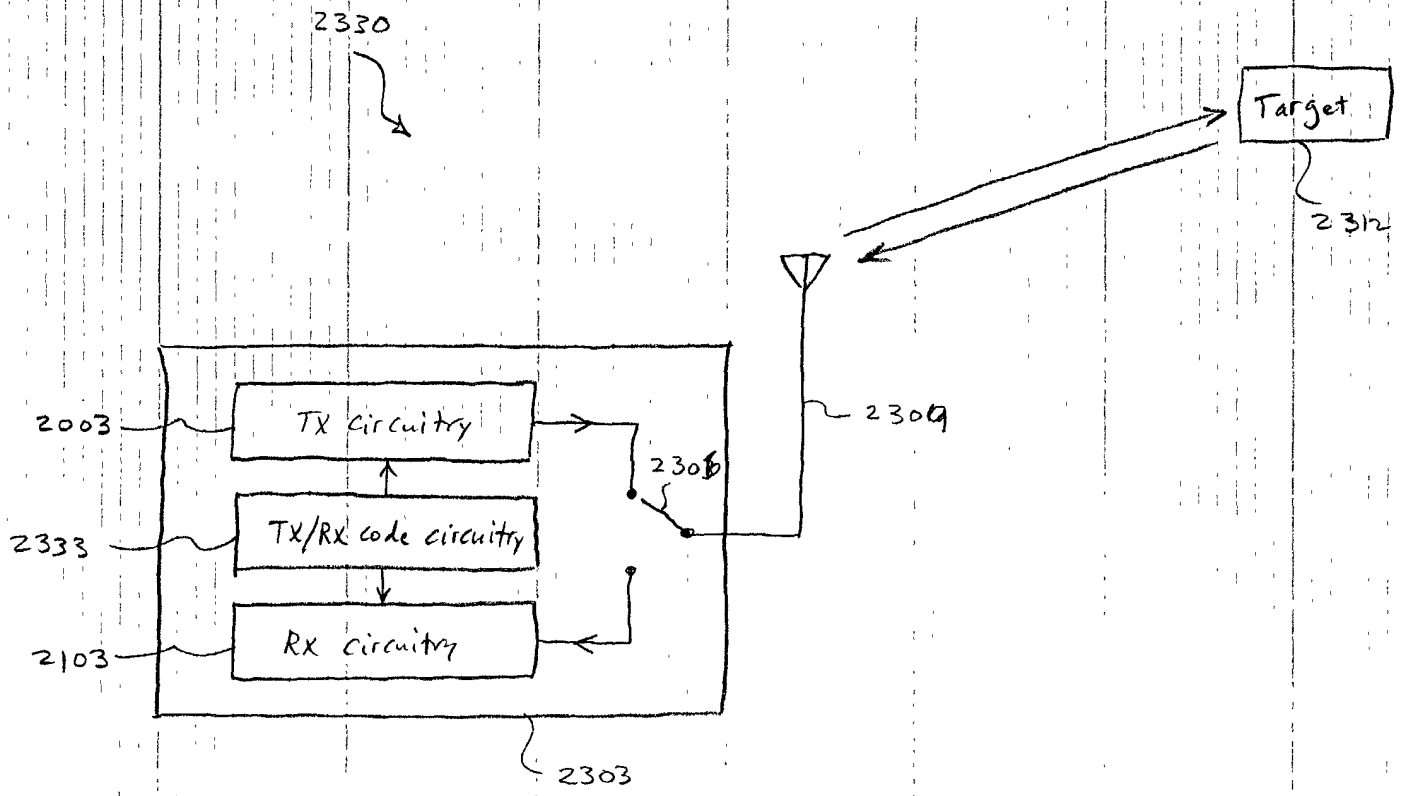

2330
Target
2312
2309
2308
2003
TX circuitry
2333
TX/RX code circuitry
2103
RX circuitry
2303

FIG. 29B

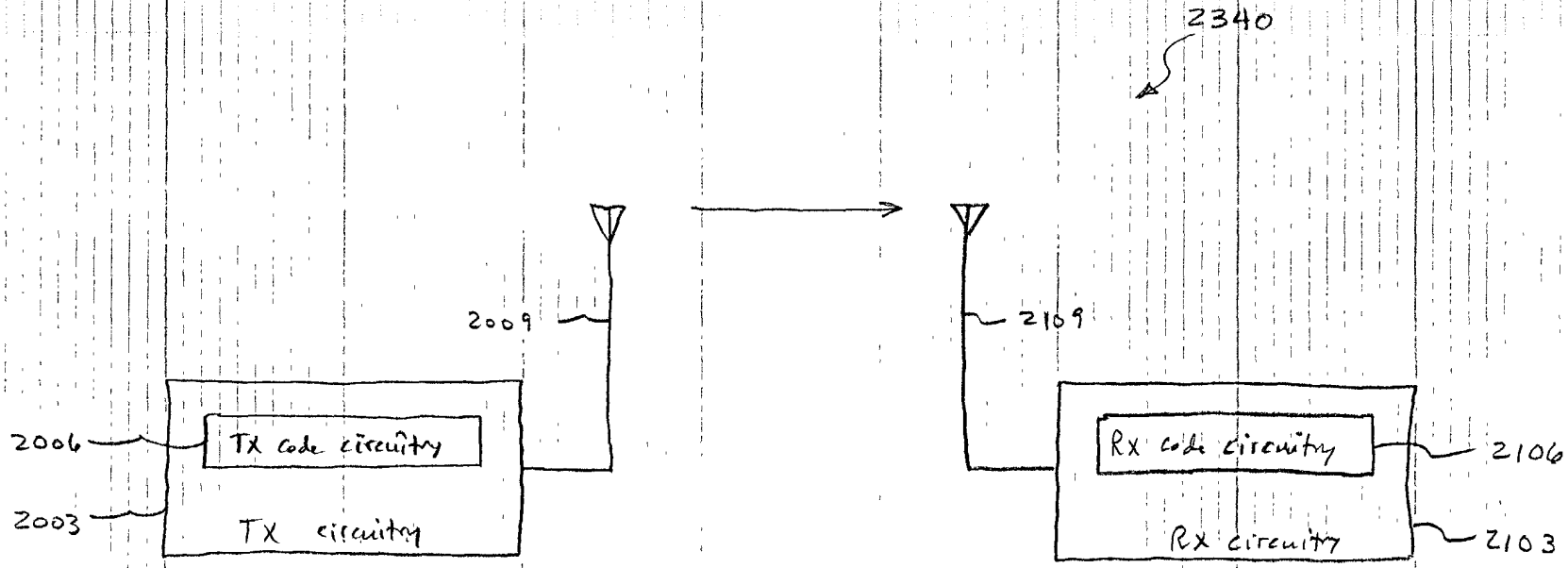

2340
2009
2109
2006
TX code circuitry
2003
TX circuitry
RX code circuitry
2106
RX circuitry
2103

FIG. 30

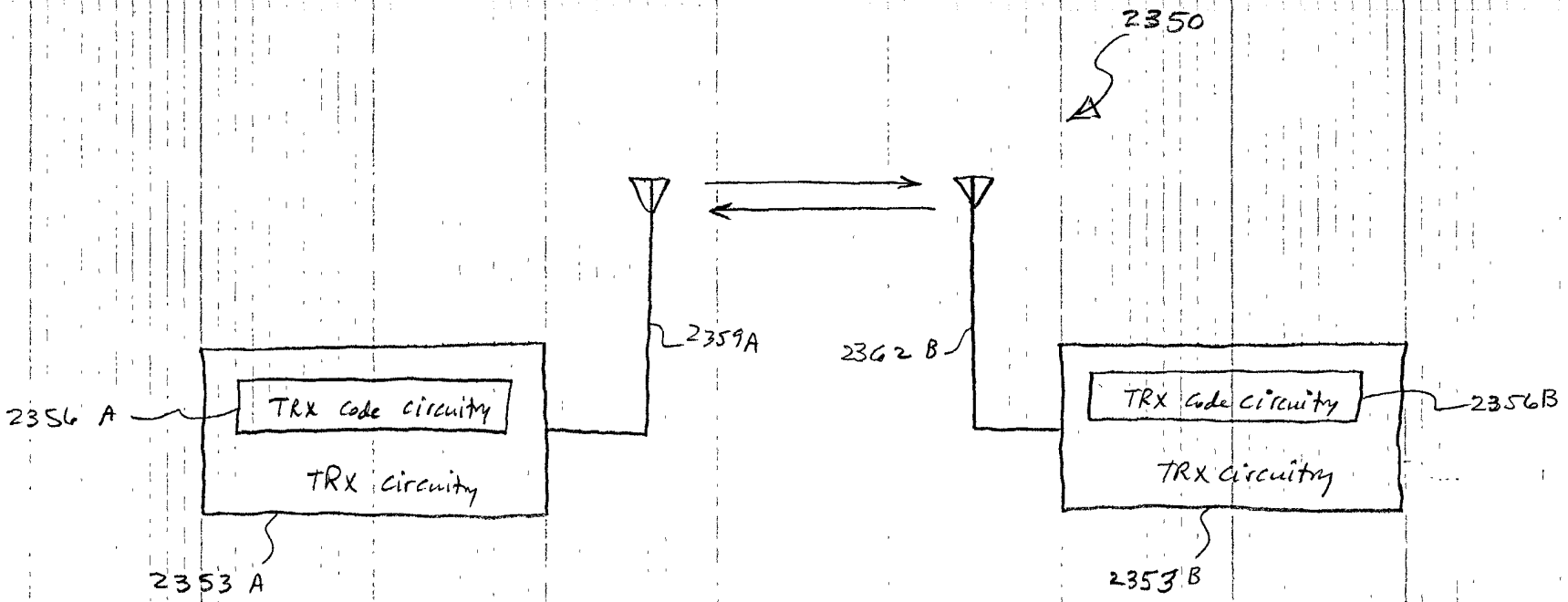

2350
2359A
2362 B
2356 A
TRX Code circuitry
TRX circuitry
2353 A
TRX Code circuitry
2356B
TRX circuitry
2353 B

FIG. 31A

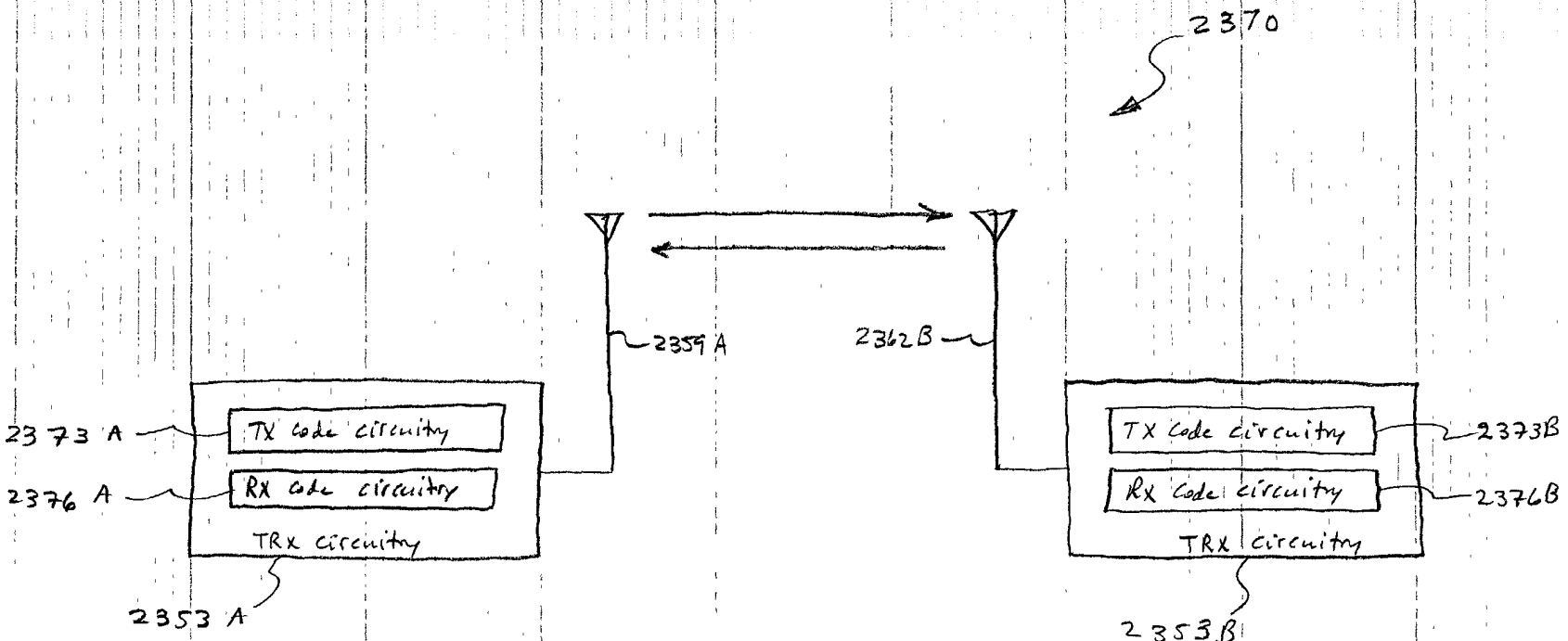

2370
2359 A
2362 B
2373 A
TX Code circuitry
2376 A
RX Code circuitry
TRX circuitry
2353 A
TX Code circuitry
2373B
RX Code circuitry
2376B
TRX circuitry
2353B

FIG. 31B